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[54] **BIODEGRADABLE DRUG DELIVERY
VASCULAR STENT**

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Related U.S. Application Data

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[51] **Int. Cl.⁶** **A61F 2/06**; A61F 2/04

[52] **U.S. Cl.** **623/1**; 623/12; 606/195

[58] **Field of Search** 623/1, 11, 12; 600/36; 606/194, 195, 198

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,167,045	9/1979	Sawyer	.....	623/1
4,229,838	10/1980	Mano	.....	623/1
4,749,585	6/1988	Greco et al.	.....	623/1
4,787,900	11/1988	Yannas	.....	623/1
4,801,299	1/1989	Brendel	.....	623/1
4,814,120	3/1989	Huc et al.	.....	623/1
4,822,361	4/1989	Okita et al.	.....	623/12
4,950,258	8/1990	Kawai et al.	.....

5,024,671	6/1991	Tu et al. .
5,028,597	7/1991	Kodama et al. 623/11
5,092,885	3/1992	Yamada et al. .
5,100,429	3/1992	Sinofsky et al. .
5,147,370	9/1992	McNamara et al. .
5,201,778	4/1993	Brotzu et al. .
5,234,457	8/1993	Andersen .
5,376,376	12/1994	Li .
5,575,815	11/1996	Slepian et al. 623/1

FOREIGN PATENT DOCUMENTS

0 211 570	2/1987	European Pat. Off. .
0 420 541 A2	4/1991	European Pat. Off. .
WO 87/04935	8/1987	WIPO .
WO 93/06792	4/1993	WIPO .

OTHER PUBLICATIONS

"Biosynthesis of Heparin and Heparan Sulfate", Ulf Lindahl and Lena Kjellen, Biology of Proteoglycans, 1987.

"Molecular Biology of Proteoglycans and Link Proteins", Linda J. Sandell, Biology of Proteoglycans, 1987.

"Blood, Coagulants and Anticoagulants", Encyclopedia of Chemical Technology, vol. 4, Third Edition.

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[57] **ABSTRACT**

A stent includes a main body of a generally tubular shape for insertion into a lumen of a vessel of a living being. The tubular main body includes a substantially biodegradable matrix having collagen IV and laminin that enclose voids within the matrix. The tubular main body also includes a biodegradable strengthening material in contact with the matrix to strengthen the matrix. The tubular main body is essentially saturated with drugs.

6 Claims, 3 Drawing Sheets

